KO PROPO

Thank you for purchasing MD-1
Please confirm how to use the MD-1 by this manual before usage.

Instruction manual

Ver.1.10

Motor Driver

MD-1 (RC car ESC Type/ Quick Reverse Type/ Neutral brake Type)

KONDO KAGAKU Co., Ltd.

For your safety Please note the handling and use of this product.

⚠ Warning **The contents of this display show a possibility of death or where a serious injury may occur or a highly substantial damaging accident may occur.**

●This product is manufactured for surface use radio controls. *Discontinue use for all other purposes. Discontinue use in the event of a thunder storm. *There is danger of a lightening bolt striking the antenna of the transmitter. ●Discontinue use when consuming alcohol or medication that may hinder concentration or judgement. *Unexpected accidents are caused with a judgement mistake.●When rain and puddles are present, please discontinue use. *There are times when water enters into the equipment and control will be lost. ●Only use the batteries specified in the instruction manual of the transmitter. ●To turn the system on, start by turning on the transmitter then the receiver. To turn off the system, turn off the receiver first, then the transmitter in this sequence. ●Please be sure to use only our products for the transmitter and servos. *Concerning the damage and the like, which is generated when combining products that are not our company's genuine products we do not owe responsibility. ●Altering the transmission module is inhibited by law and is subjected to penal code violations. Resolution remodelling of all products may result in the cause of a short and other accidents. In addition, if this product is altered we will refuse repair service. ●Please do not use this product inside an airplane, hospital, near any automatic control equipment, medical electrical machinery and apparatus such as fire alarms. In addition with respect to the law, if this product effects other radio equipment and electronic equipment, use must be discontinued at once.

⚠ Attension **This displays shows the possibility or a substantially damaging accident which can cause Attention injury.**

●Please avoid storage in a place of high temperatures and high humidity because it may cause the breakdown,damage and deformation of the product. ●Please note when using with an engine model, place where exhaust and the waste oil will not come into contact with the product. *In case of submerging in oil or water, please send it out for repair. ●This product's performance is designed for use in the shown specified usage which is based on this instruction manual and the instruction manual of the transmitter which is used. When the instructions are not understood, please contact our service department for advise. ●After verifying the safety of use, think of all the accidents possible and please enjoy with responsibility

Our company cannot owe responsibility from the nature of the radio control models
And the customer assumes all responsibilities that result from this product being used.

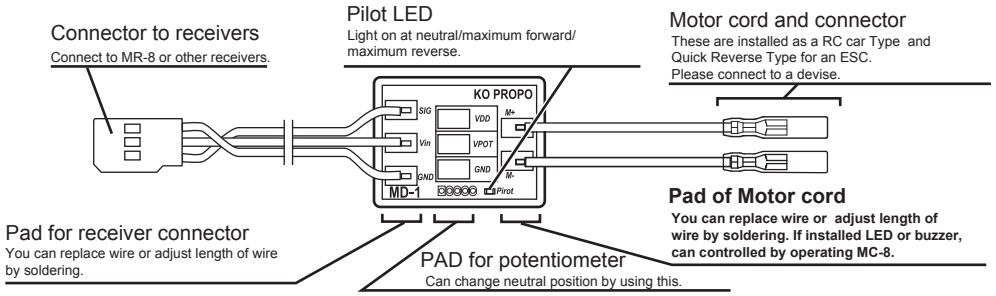
Specifications

●Control method: PWM control
●Proper power supply voltage:3.0 - 6.6V
(dry battery 2-4cell/Life 1-2cell/ Ni-MH3-5cell/LIPO1cell)
●Compatible Motor
Brushed motor less than 370 type motor for small models
(lock current less than 4A)
●Drive Frequency :about 4kHz
●Voltage output to receiver: none
●Dimensions:27.0×20.5×4.4(mm)
*excluding cords and protrusions
●Weight: 3.0g(excluding cords)
●Compatible Models
LED with limit current resistor
Electrical buzzer(can not use Piezoelectric buzzer/Speaker)

⚠ Please notice the low voltage limit of Lithium batteries.

*Battery voltage will go down due to load when using multiple motors or servos.
When using a lithium battery as a power source, please check the low limit voltage of the battery specification that can be used for the battery due to load from motors. We recommend checking these specifications and the number of motors used prior to use.

Name of parts



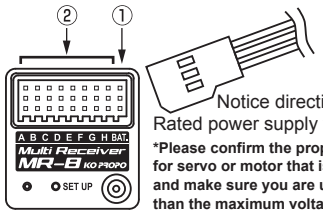
Usage

1,Connect power supply to BAT terminal.

2,Connecting MD-1 to CH-A - H that you would like to control.

3,Use after pairing with MC-8(Transmitter)

* Please refer to the manual of MC-8 about pairing method.

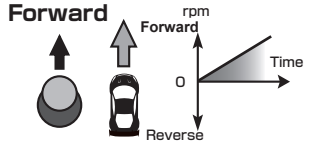
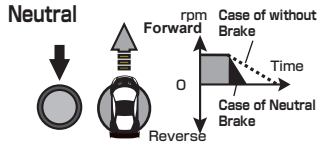
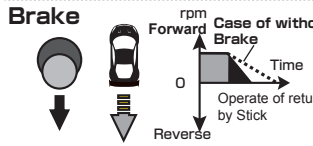
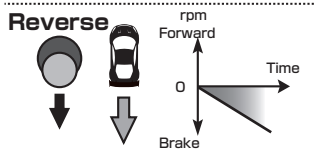


Notice direction of connector.
Rated power supply voltage:3.0V to 6.6V

***Please confirm the proper maximum voltage for servo or motor that is being connected, and make sure you are using a voltage lower than the maximum voltage.**

About the brake operation of MD-1.

Brake operation of the MD-1version is different and has two types. In the RC car ESC Specification, when retuning to neutral position after operating in the forward direction, it will free run without brake. For Neutral Brake Specification, the motor will be stopped when going from forward direction back to neutral position.

Products / Explain / Operation	RC car esc type	RCcar Quick reverse	Neutral brake type
	for General RC car Like RC car ESC, it can be used for both brake and back. Suitable for relatively speedy models that require brake operation.	**For slow speed RCcar** Used as an RC car ESC, but does not brake. Suitable for speedless models that do not require brake operation.	**For electronic work, robot and caterpillar** Suitable for models that want to stop the motor at that position immediately after stopping the operation, such as a robot arm or caterpillar.
Forward 	Operate to forward direction. Speed will be changed by the operation movement.		
Neutral 	When returning back to the neutral position, it will be free run.		While operating in the Forward or Reverse direction and operation goes back to neutral, brake will be applied. The brake strength will be different and determined by gear or gear box being used.
Brake 	If stick is operated to reverse position from a forward operation, it will apply brake. Strength of the brakes will be determined on the amount of movement	Operating the stick to the reverse position, movement will be reverse. Speed will be determined by the amount of movement.	
Reverse 	After car is stopped, operating from neutral to reverse again the movement will in reverse. Speed of reverse is determined by the amount of movement.		

About Pad of Potentiometer / pad of motor cord for electronics hobbyist

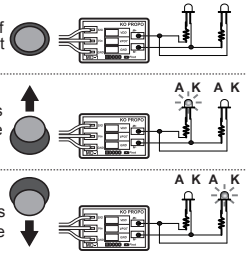
You can change neutral position of MD-1 by connecting a resistor for divide voltage or variable resistor to the pad of Potentiometer. This must be soldered so please work with someone that has experience at soldering.

Ex1)A case of using LED without divided voltage resistor.

Neutral
MD-1 has no output to pad of motor cord, so LED does not light up.

Operation of forward
Operate to forward, LED that has a connected anode to + line, the light is on.

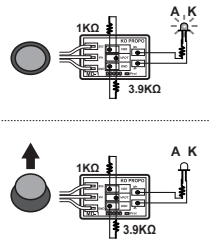
Operation of reverse
Operate to Reverse, LED that has a connected anode to - line, the light is on.



Ex 2) A case of using LED with divided voltage resistor.
(VDD-POT 1Kohm / POT-GND 3.9Kohm)

Neutral
Neutral position of MD-1 is moved, LED that is connected to an anode to + line, the light is on.

Operation of forward
Operate to forward, LED that connected to an anode to + line, the light is off.



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